

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Hacena et al.

Application No.: 10/785,602

Group No.: 2683

Filed: 2/24/2004

Examiner: Michael Vu

For: WIRELESS COMMUNICATION NETWORK FOR PROCESSING CALL TRAFFIC  
OVER A BACKHAUL NETWORK

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Commissioner for Patents

P. O. Box 1450

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**REQUEST FOR CONTINUED EXAMINATION  
RESPONSE TO FINAL OFFICE ACTION**

**Introductory Comments**

In response to the Final Office action dated September 11, 2006, please enter the following amendments and consider the following remarks.

**Amendments to the drawings:**

Please replace FIG. 4 with amended replacement sheet FIG. 4. Applicants have amended FIG. 4 to correct a numbering problem. Call processing system 420 and MSC 420 were identically numbered, and Applicants have renumbered MSC 420 as MSC 480 in the amended FIG. 4. Applicants have additionally amended the specification to renumber MSC 420 as MSC 480.

**Amendments to the specification:**

Please amend the paragraph on page 5, lines 23-25 and page 6, lines 1-8 as follows:

The prior art configuration of communication network 100 presents several problems. For instance, base station system 150 is unable to communicate with MSC 110, and base station system 140 is unable to communicate with MSC 120. Additionally, a service provider is prevented from adding a new base station system to communicate with MSC 110 over backhaul network 130 unless the base station system transfers communications according to the proprietary format understood by MSC 110. Such a restriction limits the vendors from which the service provider can acquire a new base station system. Furthermore, communication network 100 is unable to execute important call processing operations such as call handoffs because MSCs 110 and 120 are unable to communicate with base station systems 150 and 140 respectively.

Please amend the paragraph on page 8, lines 19-23 as follows:

Advantageously, communication network 200 allows for base station system 250 transfers to transfer call traffic in the second format. Additionally, communication network 200 allows network controller 210 to process call traffic from base station systems from multiple vendors. The ability to add base station systems from different vendors provides flexibility to service providers and reduces costs for service providers.

Please amend the paragraph on page 9, lines 2-13 as follows:

Figure 4 illustrates wireless communications network 400 in an embodiment of the invention. Wireless communications network 400 includes mobile switching center (MSC) 410, MSC 420 480, base station system 440, base station system 445, base station system 450, communication device 460, and backhaul network 470. MSC 410 includes call processing system 420 and translator system 430. MSCs 410 and 420 480 are coupled to communication network 405. Communication network 405 could be a data network, an internet or intranet, or the PSTN. Base station systems 440 and 445 are coupled to call processing system 420 over backhaul network 470. Base station system 450 is coupled to translator system 430 over backhaul network 470. Base station system 450 is also coupled to MSC 420 480. Translator system 430 is coupled to call processing system 420. Translator system 430 is also coupled to MSC 420 480 over backhaul network 470.

Please amend the paragraph on page 9, lines 14-21 as follows:

Communication device 460 is in communication with base station systems 440, 445, and 450 over a wireless communication standard well known to those skilled in the art. Backhaul network 470 may include other devices, systems, or components not shown for the sake of brevity. Similarly, base station systems 440, 445, and 450 may include additional elements, such as digital signal processors, transceivers, and other components well known to those in the art. ~~And An~~ MSC in this embodiment may include a radio network controller (RNC), a base station controller (BSC), or some other control system.

Please amend the paragraph on page 9, lines 22-25 and page 10, lines 1-4 as follows:

Communication device 460 could be any device capable of transmitting communications receivable by base station systems 440, 445, and 450. For example, communication device 460 could comprise a wireless phone, personal digital assistant (PDA), two-way radio, or a portable computer. Base station systems 440, 445, and 450 are base station systems capable of receiving wireless communications transmitted from communication device 460 and transferring the communications to MSCs 410 and 420 480. MSCs 410 and 420 480 are systems capable of controlling calls over wireless network 400.

Please amend the paragraph on page 10, lines 5-14 as follows:

MSC 410 and base station systems 440 and 445 are from a first vendor. MSC 420 480 and base station system 450 are from a second vendor. Base station systems 440 and 445 transfer call traffic in a different format than base station system 450. A format could comprise the arrangement of data within call traffic. Specifically, base station systems 440 and 445 communicate with call processing system 420 according to a proprietary format implemented by the first vendor. Base station system 450 communicates with MSC 420 480 and translator system 430 according to an IOS format implemented by the second vendor. One example of the IOS format comprises A3 and A7. Translator system 430 is a system capable of converting call traffic between the proprietary format and the IOS format.

Please amend the paragraph on page 11, lines 12-18 as follows:

In an embodiment of the invention, translator system 430 receives call traffic in the proprietary format from either base station system 440 or 445 for a call. Base station system 450 transfers call traffic in the IOS format for the call to MSC 420 480. Translator system 430 converts the call traffic from the proprietary format to the IOS format and transfers the IOS traffic over backhaul network 470 to MSC 420 480. MSC 420 480 then processes the IOS call traffic for the call from base stations 440, 445, and 450.

Amendments to the Claims

1. (Currently amended) A wireless communication network comprising:

a call processing system in a mobile switching center (MSC) coupled to a backhaul network;

a translator system coupled to the backhaul network and to the call processing system;

a first base station system coupled to the backhaul network, the first base station system, responsive to receiving communications for a call from a wireless communication device, transfers first call traffic for the call in a first format over the backhaul network to the call processing system;

a second base station system coupled to the translator system by the backhaul network, the second base station system, responsive to receiving the communications for the call from the wireless communication device, transfers second call traffic for the call in a second format over the backhaul network to the translator system wherein the second format is different than the first format;

the translator system, responsive to receiving the second call traffic in the second format from the second base station system, converts the second call traffic from the second format to the first format and transfers the second call traffic in the first format to the call processing system; and

the call processing system, responsive to receiving the first call traffic and the second call traffic, processes the first call traffic and the second call traffic [I.];

the first base station system, responsive to receiving the communications for the call from the wireless communication device, transfers third call traffic in the first format over the backhaul network to the translator system; and

the translator system, responsive to receiving the third call traffic in the first format over the backhaul network, converts the third call traffic in the first format to the second format and transfers the third call traffic in the second format to another call processing system.

2. (Original) The wireless communication network of claim 1 wherein the call processing system, responsive to receiving the first call traffic and the second call traffic, determines if the second call traffic is delayed compared to the first call traffic.
3. (Original) The wireless communication network of claim 2 wherein the call processing system, responsive to a determination that the second call traffic is delayed, buffers the first call traffic to synchronize the first call traffic and the second call traffic.
4. (Original) The wireless communication network of claim 3 wherein the call processing system selects either the first call traffic or the second call traffic based on a quality of the first call traffic and a quality of the second call traffic.
5. (Original) The wireless communication network of claim 1 wherein the call processing system, the translator system, and the first base station system are from a first vendor, and the second base station system is from a second vendor.
6. (Original) The wireless communication network of claim 1 wherein the first format comprises a proprietary format and the second format comprises an Inter-vendor Operating System (IOS) format.
7. (Cancelled)

8. (Currently amended) A method of operating a wireless communication network for wireless communications wherein the wireless communication network comprises a call processing system in a mobile switching center (MSC) coupled to a backhaul network, a translator system coupled to the call processing system and the backhaul network, a first base station system coupled to the backhaul network, and a second base station system coupled to the backhaul network, the method comprising the steps of:

receiving communications for a call in the first base station system from a wireless communication device;

transferring first call traffic for the call in a first format from the first base station over the backhaul network to the call processing system in the MSC;

receiving communications for the call in the second base station from the communication device;

transferring second call traffic for the call in a second format from the second base station over the backhaul network to the translator system, wherein the second format is different than the first format;

receiving the second call traffic in the second format from the second base station system in the translator system;

converting the second call traffic from the second format to the first format in the translator system;

transferring the second call traffic in the first format from the translator system to the call processing system in the MSC; and

receiving the first call traffic and the second call traffic in the call processing system and processing the first call traffic and the second call traffic [ . . . ] ;

transferring third call traffic in the first format over the backhaul network to the translator system;

receiving the third call traffic from the wireless communication device in the first format in the translator system;

converting the third call traffic in the first format to the second format; and

transferring the third call traffic in the second format to another call processing system.

9. (Original) The method of claim 8 further comprising the step of:  
receiving the first call traffic and the second call traffic in the call processing system and  
determining if the second call traffic is delayed compared to the first call traffic.
10. (Original) The method of claim 9 further comprising the step of:  
responsive to determining that the second call traffic is delayed, buffering the first call  
traffic to synchronize the first call traffic with the second call traffic.
11. (Original) The method of claim 10 further comprising the step of:  
selecting either the first call traffic or the second call traffic based on a quality of the first  
call traffic and a quality of the second call traffic.
12. (Original) The method of claim 8 wherein the call processing system, the translator system,  
and the first base station system are from a first vendor, and wherein the second base station  
system is from a second vendor.
13. (Original) The method of claim 8 wherein the first format comprises a proprietary format  
and wherein the second format comprises an Inter-vendor Operating System (IOS) format.
14. (Cancelled)

15. (Currently Amended) A wireless network controller comprising:

a call processing system in a mobile switching center (MSC) adapted to receive first call traffic for a call in a first format from a first base station system over a backhaul network;

a translator system adapted to receive second call traffic for the call in a second format from a second base station system over the backhaul network;

the translator system, responsive to receiving the second call traffic in the second format from the second base station system, converts the second call traffic from the second format to the first format and transfers the second call traffic in the first format to the call processing system; and

the call processing system, responsive to receiving the first call traffic in the first format and the second call traffic from the translator system, processes the first call traffic and the second call traffic[.] ; and

the translator system, responsive to receiving third call traffic in the first format over the backhaul network from the first base station system, converts the third call traffic in the first format to the second format and transfers the third call traffic in the second format to another call processing system.

16. (Original) The wireless network controller of claim 15 wherein the call processing system, responsive to receiving the first call traffic and the second call traffic, determines if the second call traffic is delayed compared to the first call traffic.

17. (Original) The wireless network controller of claim 16 wherein the call processing system, responsive to a determination that the second call traffic is delayed, buffers the first call traffic to synchronize the first call traffic with the second call traffic.

18. (Original) The wireless network controller of claim 17 wherein the call processing system selects either the first call traffic or the second call traffic based on a quality of the first call traffic and a quality of the second call traffic.

19. (Original) The wireless network controller of claim 15 wherein the first format comprises a proprietary format and the second format comprises an Inter-vendor Operating System (IOS) format.

20. (Cancelled)

Remarks

In the final Office Action mailed on September 11, 2006, the Examiner rejected claims 1, 5-6, 8, 12-13, 15 and 19-20 under 35 USC § 103(a) as being unpatentable over U.S. Patent Publication 2003/0158954 (Williams) in view of U.S. Patent No. 6,501,950 (Smith), and rejected claims 2-4, 9-11 and 16-18 under 35 USC § 103(a) over Williams and Smith in view of U.S. Patent 5,717,737 (Doviak), and rejected claims 7 and 14 under 35 USC § 103(a) over Williams, and Smith in view of U.S. Patent 6,005,929 (Chemin).

Applicants respectfully traverse the rejections and request reconsideration and withdrawal thereof. Claims 1, 8 and 15 are amended to better define the invention. Claims 7, 14 and 20 have been cancelled, and elements of the claims have been incorporated independent claims 1, 8 and 15.

§ 103 Rejection of Claims 1, 5-6, 8, 12-13, 15 and 19-20

The Examiner rejected claims 1, 5-6, 8, 12-13, 15 and 19-20 under 35 USC § 103(a) as being unpatentable over Williams in view of Smith. The 35 USC § 103 rejection over Williams and Smith is traversed because this combination of references does not teach the systems and method of the amended claims. The claims will be discussed in terms of amended independent claim 1.

Amended claim 1 describes a wireless communication network that enables the use of different base stations having different protocols, wherein at least one base station is adapted to communicate with a call processing system in an MSC using a different protocol than another base station. A translator is used with at least one base station to convert the call traffic to a format that is compatible with the call processing system in the MSC. Applicants have amended

claim 1 to further clarify the functionality of the system of amended claim 1 as including functionality of an MSC (e.g., a switched telephone network) versus the walkie-talkie communication system described by Williams. As amended, claim 1 now recites that the first base station system transfers third call traffic in the first format over the backhaul network to the translator system. The translator system, responsive to receiving the third call traffic in the first format over the backhaul network, converts the third call traffic in the first format to the second format. The translator system then transfers the third call traffic in the second format to another call processing system, i.e., a call handoff.

The Applicants generally submit that Williams does not describe the same type of translation in the same place in a network as described in amended claim 1. Williams describes a radio communication system having a protocol translator that permits normally incompatible communication devices, such as fire and police walkie-talkies, to communicate with each other. The translator as described by Williams is equivalent to the translation between two people speaking different languages, such as German and English. The translator of Williams allows two mobile communication devices to communicate with each other despite the language difference. Even though similar terminology is used, there are significant differences between Williams and the pending claims. In Williams, calls are transferred from a first mobile communication device to a second mobile communication device after translation. Williams does not use translation for the benefit of backhauling call traffic from base stations to a call processing system in an MSC. On the other hand, the system of amended claim 1 allows base stations to backhaul call traffic to a call processing system in an MSC in different formats. The format of the Rf communications between the mobile communication devices is not the focus of amended claim 1 as it is in Williams.

In the wireless communication network of amended claim 1, a first base station transmits call traffic for a call in a first format to a call processing system in an MSC over a backhaul network. A second base station transmits call traffic for a second call in a second format not compatible with the format of the call processing system in an MSC to a translator system over the backhaul network. The first format is a format compatible with the call processing system in the MSC, whereas the second format is not compatible with the call processing system in an MSC. The translator system converts the second call traffic from the second format to the first format compatible with the call processing system in an MSC, and transmits the second call traffic in the first format to the call processing system in an MSC. The call processing system in the MSC processes the first call traffic in the first format, and processes the second call traffic from the base station after being converted to the first format. The translator may further handle a call handoff by converting third call traffic in a first format from the first base station system to a second format, and further transfers the third call traffic in the second format to another call processing system.

At least one limitation of amended claim 1 not disclosed by Williams is a call processing system in a mobile switching center (MSC) adapted to process call traffic. The Examiner asserts that paragraph 11 of Williams describes a call processing system coupled to a backhaul network. The Applicants disagree. Paragraph 11 of Williams describes a repeater station for expanding the range of the software defined translator to cover additional regions. The repeater station(s) in Williams is simply used to amplify signals received by an antenna from a mobile communication device, and to transport the amplified signal to the translator. The repeater station does not perform any call processing functions in an MSC, but rather extends the range of the translator and facilitates the transmission of the communication from a first mobile communication device

to a second mobile communication device by amplifying signals.

Another limitation of amended claim 1 not disclosed by Williams is a translator system coupled to the backhaul network and to the call processing system, where the translator system, responsive to receiving the call traffic, converts the call traffic to the first format of the call processing system and transfers the call traffic to the call processing system. As stated above, Williams does not disclose a call processing system in an MSC, and further does not disclose a translator for converting call traffic to a format for use by a call processing system in an MSC. Further, Williams is concerned with the protocol of the Rf transmission between differing mobile communication devices. On the other hand, amended claim 1 describes a call processing system in the MSC adapted to process call traffic received over a backhaul network from base stations. The claimed call processing system in an MSC is configured to process call traffic in a specified format. If a base station is utilized in the system that has a format that the call processing system in an MSC is unable to understand, then the translator translates the call traffic from a base station to a format that the call processing system in an MSC understands. On the other hand, the translator in Williams does not translate call traffic to a format used by a call processing system in an MSC for transporting the call. Rather, Williams discloses translating communications from a format one mobile communication device uses to a format used by another mobile communication device.

The translator in Williams is positioned between a first mobile communication device, such as a walkie-talkie, and a second mobile communication device. Repeater stations may be additionally positioned between the translator and the mobile communication devices to extend the range of the translator. By contrast, the translator in amended claim 1 is positioned between the call processing system and a base station. Thus, the translator in Williams is not implemented

in the same location in the network as in amended claim 1.

Williams operates by receiving a call from a first mobile communication device in a first format, such as a police band, and translates the call to a second format that a second mobile communication device can understand, such as a fire department band. The translator and communication network of Williams is positioned between the mobile communication devices to serve communication signals of different formats between the first or second mobile communication devices. The translator in Williams generates a format for use by either mobile communication device, and does not generate a format for use by elements along the backhaul network, such as a call processing system in an MSC. For the reasons stated above, Williams does not teach that the translator system receives the second call traffic in the second format from the second base station system, converts the second call traffic from the second format to the first format and transfers the second call traffic in the first format to the call processing system in an MSC.

The cited Smith reference also does not disclose this limitation. While Smith describes an MSC translating messages to a standard format (col. 7, lines 1-5), such messages are intra-switch messages, and not base station to MSC communications. Further, the messages are fraud messages which are provided to other MSCs, and not call communications from a base station. Additionally, as Williams describes a decentralized communication system (e.g., walkie talkies), there would be no reason to modify the system of Williams to add the MSC from Smith, because Williams would have no use for a centralized switching system, such as an MSC, in a decentralized communication network.

Another limitation of amended claim 1 not disclosed by Williams is that the translator system, responsive to receiving the third call traffic in the first format over the backhaul network,

converts the third call traffic in the first format to the second format and transfers the third call traffic in the second format to another call processing system. These limitations were originally in rejected claim 7. The Examiner states that these limitations may be found in Chemin. However, neither Chemin nor Williams, individually or in combination, teach the system of amended claim 1.

Chemin does not describe the third call traffic of claim 7. The essential elements of claim 7 have been incorporated into amended claim 1, and claim 7 has been cancelled. Rather than describing base station to MSC communication of the present claims, Chemin describes a call forwarding system among multiple terminals. Chemin does not describe multiple call traffic (e.g., third call traffic) from a communication device to a base station. As such, Chemin does not describe the system of claim 7. These same arguments apply to amended independent claim 8, which now recites the essential elements of claim 14 (now cancelled), and independent claim 15.

Based on the above remarks, Applicants submit that claim 1 is novel and unobvious over Williams in view of Smith and over all art of record (considered individually or in any combination). The same arguments apply to claims 2-6, 8-13 and 15-19.

#### § 103 Rejection of Claims 2-4, 9-11 and 16-18

The Examiner rejected claims 2-4, 9-11, and 16-18 under 35 USC § 103(a) over Williams in view of Doviak. The Examiner rejected claims 7 and 14 under 35 USC § 103(a) over Williams and Smith in view of Chemin.

The 35 USC § 103(a) rejections are traversed because these combination of references do not describe or enable all of the limitations of claims 1, 8 and 15, on which claims 2-4, 9-11 and 16-18 depend on. In regard to this argument, the arguments identified above in the 35 USC § 103 rejection of claim 1 are restated. Additionally, dependent claims 2-4, 9-11, and 16-18 recite

additional limitations not disclosed by Williams, Smith, Doviak and Chemin, considered individually or in any combination.

Conclusion

For the reasons provided above, Applicants submit that claims 1-6, 8-13 and 15-19 are allowable over the art cited by the Examiner. The Applicants respectfully ask the Examiner to reconsider his position in view of the above remarks, and allow the pending claims.

Respectfully submitted,

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**SIGNATURE OF PRACTITIONER**

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